

IN THE SPECIFICATION

Please replace the paragraph at page 15, lines 3-25, with the following rewritten paragraph:

The motion-blurring-mitigated image generation section 40 specifies a region or calculates a mixture ratio based on the motion vector ~~MV~~ MVC, the processing region information HZ, and the image data DVa and uses the calculated mixture ratio to separate foreground component and background component from each other. Furthermore, it performs a motion blurring adjustment on an image of the separated foreground component to generate a foreground component image data DBf that is image data of the motion-blurring-mitigated object image. Further, it combines a motion-blurring-mitigated foreground region image based on the foreground component image data DBf into a background image based on the background component image data DBb to generate image data DVout of the motion-blurring-mitigated image. This image data DVout is supplied to the memory 55 and an image display apparatus, not shown. In this case, the foreground region image, which is the motion-blurring-mitigated object image, can be combined into a space-time position that corresponds to the detected motion vector MVC, to output a motion-blurring-mitigated image of the motion object to a position that tracks the moving object. That is, when a motion vector is detected by using at least first and second images that occur successively in time, a motion-blurring-mitigated image of the moving object is combined into a position of a target pixel, which corresponds to this detected motion vector, in one of the images or a position that corresponds to a target pixel in the other image.

Please replace the paragraph at page 16, lines 5-14, with the following rewritten paragraph:

The processing region set-up section 31 sequentially extracts processing regions subject to motion-blurring mitigation processing based on the region selection information HA and supplies the detection section 33, the motion-blurring-mitigated image generation section 40 with processing region information HZ that indicates the processing region. Further, it utilizes a motion vector $MV \ominus \underline{MV}$ detected by the detection section 33, which will be described later, to update the region selection information HA, thereby causing an image region in which motion blurring is mitigated to be tracked in such a manner that it can be met to a movement of a motion object.

Please replace the paragraph at page 21, line 10 to page 22, line 5, with the following rewritten paragraph:

It is to be noted that there may be some cases where a pixel which exists on the side of a moving region in a covered background region or on the side of the moving region in an uncovered background region is decided to be of the covered background region or the uncovered background region, respectively, even if no background components are contained in it. For example, pixel location P21 in FIG. 9 is decided to be still as a result of still/moving decision on frames #n-2 and #n-1 but to be moving as a result of still/moving decision on frames #n-1 and #n and so may be decided to be of the covered background region even if no background components are contained in it. Another pixel location P17 is decided to be moving as a result of still/moving decision on frames #n and #n+1 but to be still as a result of still/moving decision on frames #n+1 and #n+2 and so may be decided to be of the uncovered background region even if no background components are contained in it. Therefore, correcting each of the pixels on the side of a moving region in a covered

background region and each of the pixels on the side of a moving region in an uncovered background region into a pixel of a ~~movement-quantity~~ moving region allows region decision on each pixel to be accurately performed. By thus performing region decision, region information AR that indicates which one of a still region, a covered background region, an uncovered background region, and a moving region each pixel belongs to is generated and supplied to the mixture ratio calculation section 42, the foreground/background separation section 43, and the motion blurring adjustment section 44.

Please replace the paragraph at page 23, lines 11-21, with the following rewritten paragraph:

If, here, a frame period is short and so it may be assumed that a moving object that corresponds to a foreground is rigid and moves at the same speed in this frame period, a mixture ratio α of a pixel that belongs to a mixed region changes linearly in accordance with a change in position of the pixel. In such a case, a gradient θ of the ideal mixture ratio α in the mixed region can be expressed as an inverse number of a movement quantity v in a frame period of the moving object that corresponds to the foreground as shown in FIG. 12. That is, the mixture ratio α has a value of “1” in the still (background) region and a value of “0” in the moving (foreground) region and changes in a range of “0” through “1” in the mixed region.

Please replace the paragraph at page 52, lines 20-27, with the following rewritten paragraph:

The prediction coefficient learning section 762 generates a normal equation for each class indicated by the class value supplied from the class classification section 71 by using image data GT of the teacher image, the ~~image pixel~~ data from the student pixel group cut-out section 761, and a prediction coefficient. Furthermore, it solves the normal equation in

terms of the prediction coefficient by using a generic matrix solution such as the sweeping-out method and stores an obtained coefficient in the prediction coefficient memory 72.

Please replace the paragraph at page 55, lines 1-3, with the following rewritten paragraph:

At step ST38, the ~~PU24~~ CPU61 decides whether i does not equal 0 ($i \neq 0$) and, if not $i \neq 0$, the process goes to step ST39 and, if $i \neq 0$, the process goes to step 43.

Please replace the paragraph at page 57, lines 13 to page 58, line 4, with the following rewritten paragraph:

The following will describe processing to allocate motion vectors in a case where the frequency information HF indicates, for example, double-speed conversion for frames. In this case, as shown in FIG. 33, images of two frames RFn0 and RFn1 are generated newly between two frames RFa and RFb of the image data DVa. Each of the newly generated images of two frames is set as a target frame. For each of the pixels of the target frame, the motion vector allocation section 35 detects an intersecting motion vector ~~from the supplied motion vector MV~~ from the motion vector MV of the image data DVa supplied from the motion vector detection section 30 and allocates this detected motion vector as a motion vector MVC of the image of the target frame. For example, if in this pixel PGn0x of the target frame PFn0, for example, motion vector MV-j intersects an image region ~~PWn0x~~ PW for a pixel PGn0x, it allocates this motion vector MV-j as a motion vector MVC-n0x of the pixel PGn0x. Further, if multiple motion vectors intersect, it averages and allocates these multiple intersecting motion vectors. Furthermore, if no intersecting motion vector can be detected, it averages motion vectors allocated to peripheral or approximate pixels or weighs

and averages them to allocation them. In such a manner, it allocates a motion vector to all of the pixels of each of the target frames.

Please replace the paragraph at page 59, lines 1-8, with the following rewritten paragraph:

The image data DVs is supplied to a class pixel group cut-out section 913 in the class classification section 91 and a prediction pixel group cut-out section 931 in the prediction calculation section 93. Frequency information HF is supplied to a time mode value determination section 911. Further, a motion vector MVD allocated to a target pixel in a frame to be created is supplied to the time mode value determination section ~~914~~ 912 and a position mode value determination section 915.

Please replace the paragraph at page 64, lines 9-14, with the following rewritten paragraph:

After completion of the tap center position determination processing, at step ST63, the CPU61 determines a position mode value HM. In this determination of the position mode value HM, it calculates to a decimal-place precision ~~calculation of a position~~ that corresponds to the target pixel at step ST622 and converts a difference between this position and the closest pixel location into a location mode value HM.

Please replace the paragraph at page 65, lines 14-21, with the following rewritten paragraph:

A motion vector detection section 941 in the class classification section 94 detects a motion vector between a predetermined number of frames and supplies it to the tap center position determination section 912 and the position mode value determination section 915. The tap center position determination section 912 determines a tap center position as

described above and supplies it to the class pixel group ~~take-out~~ cut-out section 913 and a student pixel group ~~take-out~~ cut-out section 951.

Please replace the paragraph at page 65, lines 22-25, with the following rewritten paragraph:

The student pixel ~~take-out~~ group cut-out section 951 cuts a student pixel group comprised of multiple student pixels out of the image data GS according to the tap center position. The cutout student pixel group is supplied to a prediction coefficient learning section 952.

Please replace the paragraph at page 65, lines 26 to page 66, line 4, with the following rewritten paragraph:

The class pixel ~~take-out~~ group cut-out section 913 ~~takes~~ cuts out a class pixel group comprised of multiple student pixels according to the tap center position. The ~~taken-out~~ cut-out class pixel group is supplied to the class value determination section 914. The class value determination section 914 determines a class value based on the class pixel group as described above. This determined class value is supplied to the prediction coefficient learning section 952.

Please replace the paragraph at page 66, lines 12-28, with the following rewritten paragraph:

The prediction coefficient learning section 952 uses the time mode value, the position mode value, the class value, the student ~~learning~~ pixel group, and the teacher pixel, which are supplied thereto, to learn a prediction coefficient for predicting the teacher pixel from the student pixel group. In learning of a prediction coefficient, the prediction coefficient is

determined so as to minimize a sum of squares of errors between a prediction value and a true value in a teacher image when the prediction values are estimated according to one-dimension linear operations on the student pixel and multiple prediction coefficients. By an actual calculation method, the prediction coefficient is determined so that a value obtained as a result of partial differentiation performed on an equation about a sum of squares of the errors may become 0. In this case, a normal equation is established as described above and solved by a generic matrix solution such as the sweeping-out method, to calculate a prediction coefficient. This calculated prediction coefficient is stored in the prediction coefficient memory 92.